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Specification

Method for Adjusting a Spray Dampener

The invention relates to a method for setting up a spray dampening unit in accordance with the preamble of claim 1, 2, 40 or 41.

A dampening unit for an offset printing press is known from German Published, Examined Patent Application DE 1 611 313, wherein a dampening agent is atomized pulse-like at a selectable pulse length as a function of the number of revolutions of a forme cylinder, and is intermittently applied to the surface of a roller of the dampening unit by means of nozzles. German Published, Examined Patent Application DE 1 761 313 complements DE 1 611 313 to the extent that a pulse length and pulse sequence frequency can be adjusted, wherein the pulse length is greater at a low printing speed and shorter at a high printing speed, or the number of spray pulses emitted per revolution of the forme cylinder is higher at a low printing speed and lower at a higher printing speed.

A spray dampening unit of a printing press is known from USP 2,231,694, wherein the nozzles eject a dampening agent in an adjustable amount at predetermined chronological intervals onto a dampening roller.

A spray dampening unit of a printing press is known from USP 5,038,681, wherein a dampening agent can be applied by means of nozzles to the surface of a roller of the spray dampening unit at a fixed pulse length, but with a variable pulse sequence spacing as a function of the number of revolutions of a forme cylinder.

A spray dampening unit of a printing press is known from DE 100 05 908 A1, wherein a surface, preferably of a rotating roller, is sprayed with a dampening agent by a plurality of spray nozzles, in that the spray nozzles are each activated with a predetermined frequency and phase shift. Thus, the spray nozzles spray sequentially cyclically in a fixed order, wherein the length of time between the activation of the same spray nozzle is always the same. The pulse length, too, i.e. the time during which the spray nozzle is open, is preferably the same for all spray nozzles. The length of the area sprayed on the surface of the roller and a spacing between sequential sprayed areas are a function of the work cycle of the spray nozzles and a surface speed of the roller. However, no suggestion is found in DE 100 05 908 A1 as to what conditions must be maintained between the work cycle of the spray nozzles, or the surface speed of the roller, and a duration of the revolution of a forme cylinder in order to achieve as uniform as possible an application of the spray agent to the forme cylinder at a contact point between the roller and the forme cylinder.

A spray dampening unit of a printing press is known from USP 4,649,818, wherein an electronic control circuit controls spray nozzles as a function of a detected press speed of the printing press, wherein a frequency of the spraying pulses emitted by the spray nozzles preferably has a non-linear connection with the speed of the press. It is provided in case of a fault in the electronic control circuit in particular to set the spraying frequency manually, for example with the use of graphic aids representing a connection between the speed of the press and a spraying

frequency to be set. There is also no suggestion in USP 4,649,818 whether, and if so, which condition between the work cycle of the spray nozzles, or the surface speed of a dampening unit roller, must be maintained in order to achieve as uniform as possible an application of the spray agent to the forme cylinder at a contact point between the dampening unit roller and the forme cylinder.

As the above mentioned patent publications show, spray dampening units, which intermittently release a dampening agent, for example a water aerosol, through spray nozzles, which wets a rotating roller with moisture, have been employed for years in offset printing presses. This thin water film is transferred via further roller of the spray dampening unit to a printing forme on the forme cylinder, wherein the sprayed roller and subsequent transfer rollers rotate synchronously with the speed of the press determined by the number of revolutions of the forme cylinder.

The printing process requires different amounts of moisture, depending on the speed of the press and the print pattern. The connection between the speed of the press and the required amount of moisture can be taken from a so-called dampening curve, which is a graphic representation of a dampening degree D as a function of the number of revolutions of the forme cylinder. Thus, the dampening curve indicates what dampening degree D is to be set in a dampening agent dispenser, for example a nozzle in a spray crosspiece. The dampening degree D marks a ratio between a dampening agent throughput to be set at a dampening agent dispenser and a maximum dampening agent throughput.

Dampening degree $D = t_{ON}/t_{ON} + t_{OFF}$

wherein t_{ON} = the length of the dampening agent throughput and t_{OFF} = the length of the dampening agent blockage.

In addition to the requirement set by the dampening curve, the amount of moisture can be varied by an operator of the printing press and can be set to any arbitrary value within a value range between a blockage of the spray nozzles up to their maximum amount of flow-through. In this case a change in the amount of moisture emitted by the spray nozzle is achieved by means of the ratio between their spray time T_{on} and off-time T_{off}. Actual operations are preferably performed with as constant as possible an "on" time, so that only the "off" time is varied. Thus, the scanning time ratio (on-time to off-time) changes, together with the requirement for an amount of moisture, as well as the spraying frequency ($f = 1/(T_{on} + T_{off})$. When selecting the spraying time T_{on} it should be noted that a spray nozzle requires a definite minimum amount of time for creating its spray cone, as well as for the emergence of a defined amount of moisture, so that the spray time T_{on} can therefore not be set arbitrarily low.

Because of the intermittent spraying of dampening agent on a surface area of a rotating roller, a serious disadvantage arises in that an uneven, and therefore undesirable overlapping of sprayed-on dampening agent can arise as a function of the rotating frequency of the sprayed roller and the spraying frequency of the nozzle onto the sprayed roller, and as a result also on the surface area of the forme cylinder if, in case of an unfavorable correlation between the rotating frequency of the roller and the spraying

frequency of the nozzle, the same, or at least part of the same area on the circumference of the roller is sprayed again and again during each revolution of the roller, so that in the end too much dampening agent is applied to some areas on the surface of the cylinder, and too little to other areas. The rotating frequency of the roller and the spraying frequency of the nozzle then reach a state which is called beating interference in oscillation technology. However, an uneven distribution of the dampening agent has extremely negative effects when imprinting a material, because it leads to considerable ink variations on the material to be imprinted. The danger of an occurrence of beating interference is considerable if no appropriate countermeasures are taken, since the number of revolutions of the printing press, as well as the amount of moisture, can be freely selected by the operator. Thus, this undesirable effect can occur at any arbitrary operational states.

This effect arises analogously if more than one nozzle is arranged over the length of the roller since, in accordance with the above description, the individual nozzles are separately controlled and exactly the same effect can occur between two adjoining nozzles, i.e. adjoining nozzles spray at different frequencies because of a different requirement of the amount of moisture existing over the length of the roller, so that a beating interference between the nozzles occurs, and therefore a very uneven application of dampening agent.

The object of the invention is based on producing a method for setting up a spray dampening unit.

In accordance with the invention, this object is attained by means of the characteristics of claims 1, 2, 40 or 41.

The advantages to be gained with the invention lie in particular in that the described disadvantageous effect is lastingly counteracted in that, if not generally, then at least for a defined number of sequential revolutions of the rotating body to be dampened, synchronization with the spraying frequency is prevented for a press speed of the printing press which, though arbitrary, does at least not change at the time of the setting, in order to achieve a distribution of the dampening agent along the circumference of the rotating body which is as uniform as possible, and therefore free of interference. The undesired beating interference, i.e. the overlaying of the dampening agent on the same point of the circumference of the rotating body does not occur because, matched to the press speed of the printing press, and also as a function of the distributive behavior of the spray dampening unit in connection with different ranges of rotation frequency of the roller, a non-interfering spraying frequency, which also does not generate interferences, is set, preferably by means of programming techniques, and is also updated as required, in particular in case of a change of the press speed of the printing press. An operation free of beating interference can also be achieved if the on- and off-times of the spray nozzles are changed within the scope of defined correlations. The proposed methods permit settings of the spraying frequency which have a sufficient safe distance of, for example, up to

25%, but at least 10%, of the duration of the period of the rotating bodies, from the inadmissible, but at least undesirable synchronization values. It is possible to warn of the setting of inadmissible, but at least undesirable synchronization values; the correlations, which are to be avoided, can also be completely avoided, for example by programming techniques, because of which the monitoring outlay for a spray dampening unit in operation is reduced, and the quality of the printed products produced by means of an associated printing press is increased.

An exemplary embodiment of the invention is represented in the drawings and will be described in greater detail in what follows.

Shown are in:

Fig. 1, a perspective plan view of a spray dampening unit represented in greatly simplified form,

Fig. 2, a flow diagram for representing the distribution of the spraying pulses along a circumferential line of a rotating body, wherein a repetition length of spraying pulses is less than the duration of the revolution of the rotating body,

Fig. 3, a flow diagram for representing the distribution of the spraying pulses along a circumferential line of a rotating body, wherein a repetition length of spraying pulses is greater than the duration of the revolution of the rotating body.

In a generalized way, Fig. 1 represents a device for distributing a material 02 delivered by a material dispenser 01 along a circumference U_{03} of a rotating first rotating body 03, wherein the material dispenser 01 is arranged fixed

in place, at least during its delivery of the material 02, in respect to the rotating body 03, and wherein, in the course of its rotation, the rotating body 03 receives the material 02 in a discontinuous flow of material at a contact point 06 on its surface area along its circumference U_{03}. As can be seen in the flow diagrams of Figs. 2 and 3, a duration of the period T_{A03} of the first rotating body 03 for receiving the material 02, or its whole-number multiple nT_{A03}, wherein n = 1, 2, 3 ..., is different from a duration of the revolution T_{03} of the first rotating body 03, or its whole-number multiple nT_{03}, wherein n = 1, 2, 3 .... In the course of the operation of the material dispenser 01, the material 02 is always available at the contact point 06 in a definite dosage basically only at the end of the duration of the period T_{A03}, wherein this duration of the period T_{A03}, or its whole-number multiple nT_{03}, wherein n = 1, 2, 3 ..., has been purposely selected to be unlike the actual duration of the revolution T_{A03} of the first rotating body 03, or its whole-number multiple nT_{03}, wherein n = 1, 2, 3 ....

Because of previous incomplete material transfers at prepositioned transfer rollers, in actual use a partial amount of the defined dosage of the material 02 to be transferred can also again be ready at the contact point 06 at other times than at the end of a complete duration of the period T_{A03}, or its whole-number multiple nT_{A03}, wherein n = 1, 2, 3 ..., however, such effects caused by incomplete material transfers will not be considered here.

Since the material 02 is preferably made available from the material dispenser 01 in the described device, the above mentioned basic correlation can be met in that the material

dispenser 01 dispenses the material 02 in a discontinuous flow amount in such a way that a duration of the period T_{A01}, or its whole-number multiple nT_{A01}, wherein n = 1, 2, 3 ..., is different from the duration of the revolution T_{03} of the first rotating body 03, or its whole-number multiple nT_{03}, wherein n = 1, 2, 3 ....

In order to obtain as uniform as possible an application of the material 02 to the surface area of the rotating body 03 in a continuous manner, the following special correlations must be met in addition to the mentioned basic correlations:

If the duration of the period T_{A01} for delivering the material 02, or the duration of the period T_{A03} of the first rotating body 03 for receiving the material 02, or a whole-number multiple of the duration of these periods nT_{A01}, nT_{A03}, wherein n = 1, 2, 3 ..., is less than the duration of the revolution of the first rotating body 03 (Fig. 2), a chronological difference Delta T_1 between the duration of the revolution T_{03} of the first rotating body 03 and the duration of the period T_{A01} for delivering the material 02, or the duration of the period T_{A03} for receiving the material 02, or their whole-number multiple nT_{A01}, nT_{A03}, wherein n = 1, 2, 3 ..., which is less than the duration of the revolution of the first rotating body 03, should be greater than the duration of a delivery T_{on} (on-time) of the material dispenser 01. Under the assumption that nT_{A01}, $nT_{A03} < T_{03}$, wherein n = 1, 2, 3 ..., the following therefore applies:

Delta $T_1 = T_{03} - (nT_{A01}, nT_{A03}) > T_{on}$, wherein n = 1, 2, 3 ....

If the duration of the period T_{A01} for delivering the material 02, or the duration of the period T_{A03} of the first rotating body 03 for receiving the material 02, is greater than a whole-number multiple of nT_{A03}, wherein n = 1, 2, 3 ..., of the duration of the revolution of the first rotating body 03 (Fig. 3), the duration of the period T_{A01} for delivering the material 02 or the duration of the period T_{A03} for receiving the material 02 must not assume a value, i.e. must not be set to a value, which is located in an interval X, whose lower threshold value t_u is formed by the whole-number multiple $(n+1) * T_{03}$, wherein n = 1, 2, 3, of the duration of the revolution T_{03} of the first rotating body 03 which next follows the duration of the period T_{A01}, T_{A03}, reduced by the duration of the delivery T_{on} (on-time) of the material dispenser 01, and whose upper threshold value t_o is formed by the whole-number multiple $(n+1) * T_{03}$, wherein n = 1, 2, 3, of the duration of the revolution T_{03} of the first rotating body 03 which next follows the duration of the previously mentioned period T_{A01}, T_{A03}. Under the assumption that nT_{A01}, $nT_{A03} > T_{03}$, wherein n = 1, 2, 3 ..., the following therefore applies:

$$nT_{03} < T_{A01},\ T_{A03} < (n+1)*T_{03} - T_{on},\ \text{wherein } n = 1, 2, 3 \ldots$$

In the proposed device, the duration of the delivery T_{on} of the material 02 periodically delivered by the material dispenser 01 within the duration of its period T_{A01}, which is being kept constant, can be set to be variable, while at the same time oppositely changing the off-time T_{off}. But the duration of the period T_{A01}, while matching the duration of

delivery T_{on}, or the off-time T_{off}, or of both times T_{on}, T_{off}, can be set to be variable. In this case the duration of delivery t_{on} of the material 02 delivered by the material dispenser 01, and the duration of its period T_{A01}, preferably start simultaneously, i.e. the duration of the period T_{A01} respectively begins to count with the start of the duration of delivery t_{on} of the material 02. An advantageous embodiment of the proposed device provides that the duration of the period T_{A01} for delivering the material 02 from the material dispenser 01, or the duration of the period T_{A03} of the first rotating body 03 for receiving the material 02, is at least twice the duration of rotation T_{03} of the first rotating body 03, i.e. T_{A01}, $T_{A03} > 2 * T_{03}$.

If the duration of the revolution T_{03} of the first rotating body 03 differs from the duration of its period T_{A03} for receiving the material 02, the rotating body 03 inevitably picks up the material at different places of its circumference U_{03}, at least for a defined number of its revolutions. In some applications it may not be harmful in respect to the desired and as uniform as possible distribution of the material 02 on the surface area of the first rotating body 03 if, starting from a defined number of revolutions, and therefore repetitions of the duration of the revolutions T_{03}, for example two, three, five, ten or arbitrarily more revolutions, the material 02 is again applied in its full dosage at the same point of its circumference U_{03}. In a preferred embodiment, the chronological difference Delta T_1 between the duration of the revolutions T_{03} of the first rotating body 03 and the duration of the period T_{A01} for delivering the material 02,

or the duration of the period T_{A03} for receiving the material 02, or their whole-number multiples nT_{A01}, nT_{A03}, wherein n = 1, 2, 3 ..., is for example at most one tenth of the duration of the revolution T_{03} of the first body 03. In the same way, the time window excluded during the interval X from a permissible setting range should preferably be at most one tenth of the duration of the revolution T_{03} of the first rotating body 03. Moreover, the duration of the revolution T_{03} of the first rotating body 03 should preferably not be a whole-number multiple of the difference n Delta T_1, or of the interval nX, n = 1, 2, 3 ... in each case. However, these suggested settings for the duration of the chronological difference Delta T_1, or of the interval X, can be adapted to the respective requirements of the printing press.

The material dispenser 01 can deliver the material 02 to at least a second rotating body 04, which is preferably arranged axially in respect to the first rotating body 03, wherein the second rotating body 04 transfers the material 02 at a contact point 06 with the first rotating body 03 at least partially to the first rotating body 03. In a further development of this embodiment it is also possible to provide several second rotating bodies 04 (Fig. 1), for example five in number, which constitute a transport chain for the material 02 leading from the material dispenser 01 to the first rotating body 03, wherein one of the second rotating bodies 04 picks up the material 02 delivered by the material dispenser 01 and transfers it, at least partially, to a succeeding second rotating body 04 at a contact point 07. If several second rotating bodies 04 are provided, this transfer from one to the next second rotating body 04 is repeated

until the material 02 has reached the first rotating body 03. In the course of this the amount of the dosage originally delivered by the material dispenser 01 is reduced during every transfer to the next rotating body 03, 04 in accordance with known laws (gap law).

If several second rotating bodies 04 have been provided, they can differ from each other in their diameters D_{04} or the duration of their revolutions T_{04}. Also, the diameter D_{04} of at least one second rotating body 04 can be less than the diameter D_{03} of the first rotating body 03 (Fig. 1). For example, the rotating bodies 03, 04 have a diameter D_{03}, D_{04} of 140 mm to 420 mm, for example, the first rotating body 03 preferably between 280 mm and 340 mm, and the second rotating body or rotating bodies 04 preferably between 140 mm and 200 mm. The axial length L of the rotating bodies 03, 04 lies, for example, in the range between 500 mm and 2400 mm, preferably between 1200 mm and 1700 mm. If the first rotating body 03 and the second rotating body 04 have different diameters D_{03}, D_{04}, the duration of rotation T_{03} and the duration of rotation T_{04} can have a ratio in respect to each other which corresponds to the quotient of the diameters D_{03}, D_{04}, in particular in case the rotating bodies 03, 04 are coupled with each other by friction or by a gear. This correspondingly applies to several second rotating bodies 04 of different diameters D_{04}. However, it can also be provided that the rotating bodies 03, 04 are driven separately and independently of each other.

Since the duration of the revolution T_{03} of the first rotating body 03, or the duration of the revolution T_{04} of the second rotating body 04, with their respective diameters

D_{03}, D_{04} are in a fixed relationship, the above mentioned correlations can also be set as a function of the diameters D_{03}, D_{04}.

If the material dispenser 01 initially delivers the material 02 to a rotating second rotating body 04, the correlations previously mentioned in respect of the durations of the revolutions T_{03} of the first rotating body 03 preferably correspondingly apply to the correlation between the duration of the period T_{A01} for delivering the material 02 from the material dispenser 01 and the duration of the revolution T_{04} of that second rotating body 04 to whose surface area the material 02 is delivered by the material dispenser 01.

It is of advantage if a total time T, consisting of the duration of the period T_{A01} for delivering the material 02 from the material dispenser 01 to the second rotating body 04, and a duration of transport T_{TR} needed by the at least one second rotating body 04 from its reception of the material until its at least partial material transfer to the first rotating body 03, is not equal to a whole-number multiple of the length of revolution nT_{03}, wherein $n = 1, 2, 3 \ldots$, of the first rotating body 03. The duration of transport T_{TR}, which corresponds to the time of passage of the material 02 through the device, is a function of the number of the second rotating bodies 04 provided and their respective duration of revolutions T_{04}, as well as of the arrangement of the contact points 06, 07 for transferring the material 02 from one rotating body 03, 04 to the next, i.e. of the time required for traveling the path along a circumference U_{04} of the second rotating bodies 04, which

exists between the individual contact points 06, 07. Accordingly, the following applies:

$$T = T_{A01} + T_{TR} \neq nT_{03}, \text{ wherein } n = 1, 2, 3 \ldots.$$

Corresponding to the already mentioned correlations it is also of advantage if a chronological difference Delta T_2 between the duration of the revolution T_{03} of the first rotating body 03 and the total time T is greater than a duration of delivery T_{on} of the material dispenser 01, provided the total time T, or even a yet to be determined whole-number multiple of this total time nT, wherein n = 1, 2, 3 ..., is less than the duration of the revolution T_{03} of the first rotating body 03. In the same way it preferably applies that in connection with the proposed device the total time T takes on a value, i.e. is set to a value, which lies outside of an interval X, whose lower threshold value t_u is formed by a whole-number multiple (n+1) * T_{03}, wherein n = 1, 2, 3 ..., of the duration of the revolution T_{03} of the first rotating body 03, which next follows the total time T and is reduced by the duration of delivery t_{on} of the material dispenser 01, and whose upper threshold value t_o is formed by the whole-number multiple (n+1) * T_{03}, wherein n = 1, 2, 3 ..., of the duration of the revolution T_{03} of the first rotating body 03, which next follows the total time T, if the total time T is greater than a whole-number multiple (n+1) * T_{03}, wherein n = 1, 2, 3 ..., of the duration of the revolution T_{03} of the first rotating body 03, which directly precedes the lower threshold value t_u.

In an actual embodiment of the proposed device, the first rotating body 03 is for example a forme cylinder 03 of a printing press, preferably an offset rotary printing press. The at least one second rotating body 04 is embodied as a roller 04 of, for example, an inking unit or a dampening unit, in particular a spray dampening unit, which is part of the printing press. The material 02 delivered from the material dispenser 01 then is a printing substance or, in particular a dampening agent 02, wherein the material 02 is preferably capable of being sprayed, for example in the form of an aerosol, which is applied discontinuously and metered in its amount, preferably by spraying, from a distance a to a moving surface, preferably a rotating surface area of a rotating body 03, 04. The material dispenser 01 is preferably designed as a nozzle 01, wherein the nozzle 01 preferably ejects the material 02 in a pulsed manner and therefore intermittently. Several, preferably identical material dispensers 01, for example in the form of several nozzles 01 which are preferably spaced apart at equal distances on a spray crosspiece 08 (Fig. 1), can be arranged in the axial direction of the first rotating body 03 or of the at least one second rotating body 04.

The duration of the period T_{A01} for delivering the material 02 is composed of the duration of delivery T_{On} of the material dispenser 01 and an off-time T_{Off} of the material dispenser 01 (Figs. 2 and 3). In this case the duration of delivery T_{On} of the material dispenser 01, its off-time T_{Off}, or both times T_{On}, T_{Off} can preferably be set to be variable, in particular by remote control from a

control console assigned to the printing press. Now the duration of delivery T_{on} of the material dispenser 01, its off-time T_{off}, or both times T_{on}, T_{off}, are set in such a way that the desired correlation between the duration of the period T_{A01} for delivering the material 02 and the duration of the revolution T_{03} of the first rotating body 03, or the duration of the revolution T_{04} of the second rotating body 04 is met, if necessary by taking into consideration the duration of transport T_{TR} of the material 02 through the spray dampening unit. Thus, this setting takes place as a function of the duration of revolution T_{03} of the first rotating body 03, or of the duration of revolution T_{04} of the second rotating body 04. This setting and, if required its updating, is preferably performed by means of programming techniques, i.e. with the aid of a program which determines at least one value-based setting for each possible value of the duration of revolution T_{03} of the first rotating body 03, or of the duration of revolution T_{04} of the second rotating body 04, which meets the required correlation. In this case the program only allows one permissible setting, which meets the required correlations, while an operator of the printing press is at least warned about unfavorable or impermissible settings, provided the program itself does not eliminate a setting not meeting the required correlations as impermissible and in this way effectively prevents an undesired beating interference in respect to the application of the material.

Up to now. the chronological behavior of the proposed device was always described by stating the duration T_{on}, T_{off}, T_{03}, T_{04}, T_{A01}, T_{A03}, T, T_{TR}, Delta T_1, Delta T_2, or

its multiple. It is known to one skilled in the art that the same purpose can be accomplished by citing corresponding frequencies, because these physical values are indirectly proportional to each other ($f = 1/T$).

A rotating frequency f_{03} of the first rotating body can preferably reach approximately 15 Hz from a dead start, which corresponds to a number of revolutions of more than 50000 revolutions per hour. In connection with a printing press the latter statement is also called its press speed. In a preferred embodiment the proposed device is embodied as a spray dampening unit, whose spray nozzles 01, for example eight in number, are arranged fixed in place in respect to a rotating second rotating body 04, i.e. a dampening unit roller, in the axial direction in relation to the second rotating body 04 and at a distance a of, for example 80 mm to 150 mm from it (Fig. 1), wherein the duration of the delivery T_{on} of a dampening agent 02, which is periodically emitted by the spray nozzles 01 in a spray cone directed on the second rotating body 04 and widening in the direction toward the second rotating body 04, can be variably set between 5 ms and 30 ms. The duration of the period T_{A01} of the spraying cycle can be varied, including the off-time T_{off} of the spray nozzles 01, within a range of 50 ms and 1200 ms, preferably between 100 ms and 1000 ms, wherein the following relationship applies: $T_{A01} = T_{on} + T_{off}$.

At a selected or predetermined press speed, i.e. as a function of the duration of the revolution T_{03} of the first rotating body 03, and also as a function of the duration of the revolution T_{04} of the second rotating body 04, which can be affected by a speed ratio between the first rotating body

03 and the second rotating body 04, based on their different diameters D_{03}, D_{04} and, if required, taking into consideration the duration of transport T_{TR}, when several second rotating bodies 04 are provided, the duration of the delivery T_{on} or the off-time T_{off} of the spray nozzles 01 are set in such a way that the previously mentioned correlations are met. Thus, advantageous correlations result for each press speed and configuration, and also those which are to be avoided, so that as uniform as possible a distribution of the dampening agent on the surface area of the first rotating body 03 takes place. For the control of the spray dampening unit, the determined correlations define, besides the basic requirement of the inequality of T_{A01}, T_{A03}, T and T_{03}, either a further requirement, if it applies that nT_{A01}, nT_{A03}, $nT < T_{A03}$, wherein n = 1, 2, 3 ..., or an exclusion criteria, if T_{A01}, T_{A03}, $T > nT_{A03}$, wherein n = 1, 2, 3 .... By maintining the found correlations it is possible to achieve that a homogeneous film of a layer thickness of, for example, 1 μm to 10 μm, in particular between 1 μm and 2 μm, is assured on the surface area of the forme cylinder 03 in particular.

The found correlations should preferably be maintained over the entire range of the press speed, but at least in the upper third of the press speed, i.e. in the main production range of the printing press. For example, in case of a double-wide, double circumference rotary printing press, for example a newspaper printing press, with a maximum number of revolutions of 45000 revolutions per hour, for example, this means that because of being programmed, the control assures

that the found correlations, starting at a press speed of 30000 revolutions per hour, are dependably maintained.

List of Reference Symbols

01	Material dispenser, nozzle spray nozzle
02	Material, dampening agent, printing substance
03	Rotating body, first, forme cylinder
04	Rotating body, second, roller, dampening unit roller
05	-
06	Contact point
07	Contact point
08	Spray crosspiece
a	Distance (01)
D_{03}	Diameter (03)
D_{04}	Diameter (04)
L	Length (03, 04)
U_{03}	Circumference (03)
U_{04}	Circumference (04)
T	Total time
T_{on}	Duration of receiving material
T_{off}	Duration of off-time
T_{A01}	Duration of period (01)
T_{A03}	Duration of period (03)
T_{03}	Duration of revolution (03)
T_{04}	Duration of revolution (04)
T_{TR}	Duration of transport
Delta T_1	Difference

Delta T_2	Difference
f_{03}	Rotation frequency
t_u	Threshold value, lower
t_o	Threshold value, upper
n	Whole-number multiple
X	Interval